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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

STAHL, MICHAEL J

ART UNIT PAPER NUMBER

2874

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n No.

09/745,033

Applicant(s)

JIANG ET AL.

Examin r

Mike Stahl

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-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

**Period f r Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 60-116 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 60-62 and 66-116 is/are rejected.
- 7) ☒ Claim(s) 63-65 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 24, 2003 has been entered.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 60-62, 67-77, 80, 82-85, 87, 89-91, 93-97, 99-100, 102-103, and 105-108, and 110-116 are rejected under 35 U.S.C. 102(e) as being anticipated by Scharf et al. (US 6369924).

Scharf discloses an optical module (figs. 1-10) comprising first and second optoelectronic devices 44 and 45 for coupling light into or receiving light out of fibers, first and second printed circuit boards (PCBs) 36 and 37 which are coupled to the optoelectronic devices and parallel to their optical axes, and which include pins 40 and 41, a shielded housing 30 spaced around the first and second PCBs to reduce EMI, and a base 22 coupled to the shielded housing perpendicular to the PCBs. The base 22 extends along a length of and is perpendicular to the

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printed circuit boards, and has openings for the pins of the printed circuit boards to extend through (best shown in fig. 1). The Scharf module thus anticipates independent claims 60, 83, and 94.

As to independent claims 105 and 110, in addition to other limitations addressed above, Scharf teaches that the housing 30 may be conductive (col. 6 lines 13-15) and that a forward portion 30a may be made of die-cast metal (col. 5 lines 50-52). Accordingly, it is asserted that the entire housing 30 may be metallic. With further regard to claim 105, the base 22 may be regarded as being a portion of the housing, at least in the sense that it contributes to the enclosure of the PCBs and optoelectronic devices. It is noted that the present specification does not disclose that the base 205 may be integral with the housing 119.

Features of the Scharf module already described above meet the requirements of claims 74, 95, 100, 103, and 111.

As to claims 61, 75, 93, and 99, the first and second optoelectronic devices have terminals which are coupled to the upper and lower sides of their respective PCBs (fig. 6).

As to claims 62, 80, 87, and 97, the PCBs 36 and 37 are vertical circuit boards perpendicular to a horizontal plane (e.g. the plane occupied by base 22 may be defined as a horizontal plane).

As to claims 67, 68, 106, and 107, the housing 30 is electrically coupled to ground on the base 22 (col. 6 lines 15-18). Since board 22 itself may be included in a larger overall housing (col. 4 lines 19-22), it is asserted that the ground of board 22 would in turn be coupled to the overall housing (which constitutes a system chassis). As to claims 69 and 108, it is asserted that

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grounding the housing by coupling to a grounded trace on the first PCB 36 is within the scope of the Scharf disclosure.

Regarding claims 70, 71, 76, and 77, the base may be regarded as a portion of the housing as noted above in relation to claim 105, and the base includes openings from which the pins 40/41 of the PCBs extend.

As to claims 82, 84, 85, and 96, the housing includes an internal shield 35.

As to claims 72 and 89, the front portion 30a of the Scharf module constitutes a nose which receives a fiber connector 23 and aligns a pair of fibers with their associated devices 44 and 45. As to claims 73 and 90, the front portion 30a may be made of die-cast metal and provides shielding accordingly.

As to claims 91, 102, and 112, the first and second devices 44 and 45 are an emitter and a photodetector, respectively, and the module is a transceiver module.

Claims 113-116 are satisfied by aspects of the Scharf module described above.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 66, 78-79, 81, 86, 88, 92, 98, 101, 104, and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scharf et al. (cited above).

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As to claim 78, it would have been obvious to a skilled person to alternatively use a pair of fiber connectors in the Scharf arrangement, since in some situations it would be beneficial to route the transmitting and receiving fibers independently. As to claim 79, the front housing portion 30a acting as the nose is made of metal and provides shielding as noted above.

As to claims 66 and 86, Scharf is silent as to the existence of a lens for coupling light between the fibers and the optoelectronic devices 44 and 45. Even if there are not lenses built into these devices as implemented in the Scharf module, it nevertheless would have been obvious to a skilled person to provide such lenses since it is routine to use lenses to optimize the coupling of light between devices and fibers.

As to claims 81, 88, and 98, Scharf does not disclose a system circuit board which is distinct from the circuit board 22 being interpreted as a base in the above rejections. It is common in the art to connect a number of circuit boards to a common system circuit board such as a backplane. It would have been obvious to a skilled person to couple the respective boards of a plurality of the Scharf modules to a common system circuit board in order to simplify distribution of electrical power and communication signals among the modules. In this case each board 22 would be connected (e.g. via a slot) perpendicularly to the system circuit board, and accordingly the internal printed circuit boards of each module would be perpendicular to the system board.

As to claim 92, Scharf describes the emitter 44 only as a laser. It would have been obvious to a person of ordinary skill in the art to specifically choose a vertical cavity laser since this type of laser is known to be relatively efficient and stable, and since it can be mounted more easily in its package than edge-emitting types of lasers.

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As to claims 101, 104, and 109, Scharf discloses the possibility of using a die-cast metal for forming the housing. However, it would have been obvious to a skilled person to alternatively form the housing from metal-plated plastic since this choice of materials is better suited to mass production and would accordingly be less expensive.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Response to Arguments***

Applicant's remarks regarding the Scharf reference have been considered but are generally moot since in this office action the examiner has partially modified the basis for rejection under this reference.

Applicant's arguments regarding the previous rejection under Henningson et al. are generally persuasive. Essentially, claims 94, 105, and 110 were amended to further recite that the base is perpendicular to the printed circuit boards. Henningson only shows the PCBs being parallel to the base. Accordingly the rejection under Henningson has been withdrawn.

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Applicant's continued arguments concerning the previous rejection under Wolf in view of Benzoni are generally persuasive. Applicant has argued that independent claims 60, 83, and 94 essentially recite a shielded housing spaced from the PCB. The examiner has reviewed the 09/069,128 application cited by Wolf, and neither this application nor the Wolf reference itself provides a clear teaching that the PCBs are not in contact with the sidewalls of the housing, or that the housing is actually spaced from the PCBs as claimed. Therefore the rejection under Wolf in view of Benzoni has been withdrawn.

***Allowable Subject Matter***

Claims 63-65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 63 requires that the fiber optic module mounts to a system printed circuit board such that the first PCB is perpendicular to the system PCB *and* such that the optical axis of the first optoelectronic device is parallel to the system circuit board. In the rejection above, board 22 was interpreted as the base of the fiber optic module. Even though claims 81, 88, and 98 similarly recite the module PCB being perpendicular to the system PCB, and were held to be obvious in view of the prior art, these claims do not specify that the optical axis of the optoelectronic device is parallel to the system circuit board. To achieve this condition the module boards 22 themselves would have to be coupled edge-wise to the system PCB (proposed as a backplane in the rejection) such that they are generally coplanar with the system PCB. It does not appear that this arrangement would be obvious since it would quickly use up the limited space along the edge of the system PCB and would not take advantage of the broader



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area presented by the major surface of the system PCB. This is in contrast to the modification proposed in the rejection, which has the module PCBs 22 coupled perpendicularly to the surface of the system PCB. Accordingly claim 63 is considered to be unobvious in view of the applied Scharf reference. Claims 64 and 65 depend from claim 63.

***Conclusion***

US 2003/0235375 is cited on the attached PTO-892 form. Though not available as prior art, it is considered relevant to the present application.

Any inquiry concerning this communication should be directed to Mike Stahl at (571) 272-2360. Official communications which are eligible for submission by facsimile and which pertain to this application may be faxed to (703) 872-9306. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at (571) 272-1564.

MJS

Michael J. Stahl  
Patent Examiner  
Art Unit 2874

March 19, 2004

  
AKM ENAYET ULLAH  
PRIMARY EXAMINER